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AN UPDATE ON THE LONG-TERM VARIATIONS OF JUPITER'S SYNCHROTRON EMISSION

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Time variability in the synchrotron radio emission from Jupiter's magnetosphere has been widely reported in the literature (e.g., I. dePater and M. J. Klein, *NASA SP 494*, 139-150, 1989). Attempts to correlate the variations with solar wind parameters (Bolton et. al. *JGR 94* 121-128, January 1, 1989) showed promising results with the recognition that the microwave observations spanned only about two cycles of solar activity. Additional observations to extend the time base were clearly needed.

The data base of 13-cm observations that constitute the NASA-JPL Jupiter Patrol, begun in 1971, has been extended to 1998. When combined with published observations made in the 1960's, the Jupiter observations at wavelengths near 13 cm span more than three solar cycles. Moreover, the precision of the data has been improved through the use of larger apertures and better techniques to minimize the effects of confusion with weak background radio sources.

In this paper we report new observations made with the 34-m and 70-m antennas at NASA's Goldstone Deep Space Network complex. The new data show that the Jovian synchrotron flux is increasing once again, thereby reversing the seven-year trend of steadily falling integrated flux density from 1991 through May of 1998 (with the obvious exception of the large outburst following the Comet SL-9 impacts). We also report progress on a synchrotron radiation model and compare the early results with the observations

Observations by Bolton using the 26-m Hat Creek radio telescope in the period 1988-1991 are compared with the Jupiter Patrol data. Fortuitously, the Hat Creek data fills in a gap in the Goldstone data that happened to coincide with a sharp rise in the Jovian synchrotron flux that began in November 1989.

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